Having thus described the preferred embodiments, the invention is now claimed to be:

1. An upright cleaning device comprising:

an actuator for receiving a user input;

an upper assembly to which the actuator is mounted;

a base assembly, wherein the upper assembly is pivotally mounted to the base assembly;

a rear wheel, mounted to the base assembly, configured to support the rear portion of the base assembly; and

a drive mechanism located in the base assembly having its major diameter in contact with a surface to be cleaned wherein the drive mechanism is configured to operate at one of: full speed in one direction, no speed and full speed in the opposite direction, according to the relative position of the actuator.

2. The device of claim 1, wherein the actuator comprises:

a handle slidably mounted to an upper portion of the upper assembly,

first and second spaced apart magnets fixedly mounted to the handle on an axis parallel to the longitudinal axis of the handle;

a Hall-effect sensor fixedly mounted in the upper portion of the upper assembly such that the sensor is positioned: approximately midway between the first and second magnets when no user input is applied to the handle, in close proximity to the second magnet when a forward input force is applied by the user, and in close proximity to the first magnet when an opposite input force is applied by the user.

3. The device of claim 2, wherein the Hall-effect sensor produces: an excitation voltage of 2 to 3 VDC when no user input is applied to the handle structure; an excitation voltage of 1 to 2 VDC when a first input force is applied by the user; and an excitation voltage of 3 to 4 VDC when a second input force is applied by the user.

4. The device of claim 2, further comprising:

a controller which selectively powers the drive assembly inducing one of a constant speed forward rotational motion and a constant speed backward rotational motion according to an excitation voltage produced by the Hall-effect sensor.

5. The device of claim 1, wherein the drive mechanism comprises a reversible wheel assembly including:

a stationary shaft;

a stationary armature mounted on the stationary shaft;

a tubular motor housing encircling at least a portion of the stationary shaft; and

a plurality of magnets mounted to an inner portion of the tubular motor housing between the armature and the motor housing.

6. The device of claim 5, the armature further including:

a plurality of Hall-effect sensors for sensing a position of the armature, each sensor mounted in a respective armature slot approximately flush with the outside diameter of the armature.

7. The device of claim 5, the reversible wheel assembly further including:

first and second bearings mounted on the stationary shaft.

8. The device of claim 5, the reversible wheel assembly further including:

first and second motor end caps located at respective ends of the motor housing wherein each end cap is mounted on and supported by one of the first and second bearings.

9. The device of claim 8, wherein the end caps are constructed with heat dissipating fins on their outer surfaces.

10. The device of claim 8, further including:

first and second lip seals incorporated into the motor end caps and encircling the stationary shaft.

11. The device of claim 5, further comprising a wheel tread secured to and covering the motor housing.

12. The device of claim 11, wherein the wheel tread comprises two molded polymer tread end caps having a molded surface tread pattern on an outer cylindrical portion of the end caps.

13. A self-propelled upright cleaning device comprising:

a nozzle base;

an upper housing section pivotally mounted to the nozzle base;

a handle actuator, for receiving a user input, mounted on the upper housing section;

a wheel for supporting the nozzle base; and

a drive mechanism located in the nozzle base and having its major diameter in contact with a surface to be cleaned wherein the drive mechanism comprises:

a stationary shaft,

a stationary armature mounted on said shaft,

a tubular motor housing rotatably mounted on said shaft, and

a plurality of magnets mounted to an inner face of the tubular motor housing and spaced from said armature.

14. The device of claim 13, the armature further including:

a plurality of Hall-effect sensors for sensing a position of the armature, each sensor mounted in a respective armature slot approximately flush with the outside diameter of the armature.

15. The device of claim 13 wherein said drive mechanism further comprises a traction surface secured to an outer periphery of said tubular motor housing.

16. The device of claim 13 wherein said drive mechanism further comprises first and second bearings mounted on the stationary shaft for rotatably mounting the tubular motor housing.

17. The device of claim 16 further comprising first and second motor end caps located at respective ends of the motor housing, wherein each end cap is mounted on and supported by one of the first and second bearings.

18. The device of claim 17 further comprising first and second lip seals which are incorporated into a respective one of the first and second motor end caps and encircle the stationary shaft.

19. A self-propelled upright cleaning device comprising:

a nozzle base,

an upper housing section pivotally mounted to the nozzle base;

a handle actuator for receiving user input, said handle actuator being mounted on the upper housing section; and,

a drive mechanism located in the nozzle base and having its major diameter in contact with the surface to be cleaned, wherein the drive mechanism comprises:

a rotating motor shaft,

a rotating armature mounted on said shaft,

a stationary motor housing encircling at least a portion of the rotating shaft,

a sun gear mounted on at least one end of the motor shaft,

a planetary gear train comprising at least one planet gear engaging said sun gear; and

a ring gear engaging said at least one planet gear, said ring gear being connected to a sleeve comprising a driven surface of said drive mechanism.

20. The device of claim 19, the armature further including:

a plurality of Hall-effect sensors for sensing a position of the armature, each sensor mounted in a respective armature slot approximately flush with the outside diameter of the armature.

21. The device of claim 19 further comprising a wheel tread concentrically located with respect to the motor shaft wherein said wheel tread is mounted on said sleeve.

22. The device of claim 21 further comprising first and second bearings mounted on the motor shaft wherein the bearings support respective ends of said sleeve.

23. The device of claim 19, wherein the sun gear is connected to the motor shaft.

24. The device of claim 19, wherein three spaced planet gears engage said sun gear.

25. The device of claim 24, wherein the ring gear is of one piece with said sleeve.

26. A method of propelling an upright cleaning device comprising:

sensing a user input from a handle actuator;

operating a drive mechanism located in a base assembly having its major diameter in contact with a surface to be cleaned wherein the drive mechanism is configured to operate at one of: full speed in one direction, no speed and full speed in the opposite direction, according to sensed user input.

27. The method according to claim 26, wherein the step of sensing a user input comprises:

producing a first excitation voltage when no user input is applied to the handle;

producing a second excitation voltage when a forward input force is applied by the user; and

producing a third excitation voltage when an opposite input force is applied by the user.

28. The method according to claim 27, wherein a Hall-effect sensor produces the first, second and third excitation voltages according to the position of the Hall-effect sensor with respect to two fixed magnets mounted to a non-slidable portion of the handle wherein the Hall-effect sensor is mounted to a slidable portion of the handle.

29. The method according to claim 28, wherein the first excitation voltage is in the range of 2 to 3 VDC, the second excitation voltage is in the range of 1 to 2 VDC, and the third excitation voltage is in the range of 3 to 4 VDC.